

RESTRICTED CIRCULATION

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Agricultural Memorandum No 676

Conditions for Crop Spraying II

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1. Background

Agricultural Memorandum 675 calculated the percentage of available spraying hours on certain criteria. The available hours were generally low.

2. The Development Approach

Another way of looking at the problem is to consider what changes in materials, equipment and practice would be necessary to bring the available hours to an acceptable level. One might suggest more persistent and "showerproof" herbicides, or ones effective at lower temperatures. But since it was shown in Ag. Mem. 675 that wind speed was the main limiting factor, the most promising line is the development of spraying equipment that can safely be used at higher wind speeds than at present.

3. The Three Day Week

Mr S A Evans, Regional Agronomist at Leeds, suggested that farmers and contractors would hardly be satisfied with anything less than three working days in five at peak spraying periods.

4. Data and Method

The same Leconfield observations were used as in Ag. Mem. 675. Occasions with precipitation at the time of observation or during the past hour were eliminated, as were those with temperature below 45°F (7.2°C). The remainder were sorted into a number of ranges of wind speed, expressed in knots (1 knot = 1.15 mph).

5. Results

The printed tables were scanned to find the upper wind limit for 60% of mid-day hours to be available for spraying. (It was recognised that this would be less restrictive than demanding 3 days in 5, i.e 60% of whole days). The results are given in table 1.

Table 1. Wind Limits to Achieve 60% Spraying Hours

March	Not attainable
April	Spray in all winds
May	Spray up to 17 knots
June	Spray up to 14 knots
July	Spray up to 13 knots

It is interesting to see what could be achieved (again at mid-day) if wind speed were not a limitation at all - See Table 2.

Table 2. Percentage of spraying hours obtainable by working regardless of wind speed.

	%
March	42
April	58
May	77
June	83
July	79

6. Discussion

In Ag. Mem. 675, 8 knots at the standard height of wind measurements was taken as the upper limit for spraying. Table 1 shows that to achieve a reasonable working week at Leconfield at the peak period in April and May, the wind limit would have to be at least doubled. For the non-meteorological reader it may be helpful to express this in terms of the Beaufort scale, which runs from force 0 ("calm") to force 8 ("gale"). The range 13-17 knots of table 1 corresponds to force 4 ("moderate breeze") verging on force 5 ("fresh breeze"). Casual observation suggests that at the peak spraying times, some farmers with large arable acreages do in fact chance their arm by spraying in these conditions.

Any comments or suggestions on this paper should be sent to the author.

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